UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

SAMUEL M. ROBERTS,

Plaintiff,

-vs-

LOS ALAMOS NATIONAL SECURITY, LLC, AWE, PLC, and MASSACHUSETTS INSTITUTE OF TECHNOLOGY,

Defendants,
Third-Party Plaintiffs,

-vs-

UNIVERSITY OF ROCHESTER,

Third-Party Defendant.

AFFIDAVIT OF VLADIMIR GLEBOV IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT

Civil Case No.: 11-cv-6206(L)

STATE OF NEW YORK)
COUNTY OF MONROE) ss.:

Dr. Vladimir Glebov, being duly sworn, deposes and says:

1. I am a senior scientist at the Laboratory for Laser Energetics ("LLE"). I am employed by the University of Rochester ("University").

2. My area of expertise is neutron diagnostics, which is the measurement of neutrons produced by the fusion implosion that occurs when a laser is fired at a spherical target containing nuclear fuel. I am the scientist responsible for the development and operation of neutron diagnostic instruments ("neutron diagnostics") for use in the LLE's Omega Laser Facility ("Omega Facility"). These neutron diagnostics include sophisticated scientific instruments used

during the execution of a laser shot to measure the amount of neutrons produced in that shot, as well as other shot parameters that can be inferred from their use.

3. Given my expertise in neutron diagnostics, I am involved in the development and operation processes for most of the neutron diagnostics in use in the Omega Facility. In addition, my responsibilities include ensuring that the neutron diagnostics are properly set up to optimize the collection of data during a shot. Typically, I am included as a secondary principal investigator on Omega Facility experiments which anticipate the use of neutron diagnostics.

4. One of the neutron diagnostics available in the Omega Facility is called the Neutron Temporal Diagnostic ("NTD"). The NTD records the temporal history of neutrons produced during a shot of the OMEGA laser – that is, the time interval between the laser hitting its target and the production of neutrons. The NTD consists of a plastic scintillator located in the target chamber that produces light when neutrons interact with it, and an "optical relay" that transmits the light to a streak camera located in the target bay, which is used to record data.

5. Certain laser shots produce high levels of free neutrons, which float around in the target bay of the Omega Facility. Those neutrons interact with the NTD's streak camera, creating background levels that make the data recorded by the streak camera unusable. Thus, in the summer of 2005, I proposed and was the principal investigator ("PI") for a new project to develop a new neutron diagnostic that would reduce neutron interaction with a streak camera and permit recording of useful experimental data in laser shots producing high levels of free neutrons.

6. This new diagnostic, which is based on the same concepts as NTD but is useful for shots producing higher neutron yields, is a multi-purpose diagnostic called the High Yield

Neutron Temporal Diagnostic ("HYNTD"). It includes both a streak camera and a fast Photo Multiplier Tube ("PMT"), which can be used separately or simultaneously to gather data about the temporal history of neutrons produced by a shot.

7. The HYNTD is designed to reduce neutron interaction with the streak camera and the PMT by locating them in area below the target bay called "La Cave," where the levels of free neutrons are much lower, and delivering the light from the scintillator to the streak camera and PMT via a highly polished steel pipe. Because the steel pipe was the most visible part of the HYNTD, the entire diagnostic was colloquially called the "light pipe." The light pipe is designed to be used with a scintillator producing near ultraviolet light ("scintillator mode") or with a pressurized CO_2 cell producing "Cherenkov" light ("CO_2 Cherenkov mode").

8. In accordance with official LLE policy, all project proposals for new diagnostics to be used in experiments at the Omega Facility are approved by an LLE Division Director before they undergo a multi-stage design and review process that is required for all target diagnostics used in Omega Facility experiments. A copy of that policy in effect at the time the diagnostic involved in plaintiff's accident was developed, entitled LLE Instruction 7700A, is attached at Exhibit 7. In general, University employees are the only individuals who participate in the development process for internally-designed diagnostics, and that was the case with the light pipe.

9. As the PI of the light pipe project, my responsibilities during its development included demonstrating how it would contribute to the Omega Facility's research program; scheduling, preparing, presenting, and publishing minutes from design reviews meetings

coordinated through and administered by the LLE System Engineering office; preparing and completing test plans and ensuring the project's timeline and budget goals were met.

10. Plaintiff, a senior laboratory engineer employed by the University, was the project coordinator for development of the light pipe until Miguel Cruz, a University-employed laboratory engineer, assumed this role. The project coordinator is responsible, under the direction of the PI, for administering and coordinating the project, and for overseeing the assembly and testing of the light pipe. All of these individuals were University employees.

11. During the development of the light pipe, Miguel Cruz and I occasionally consulted with Mike Moran, of Lawrence Livermore National Laboratory ("LLNL") because he had previously designed a light pipe of smaller diameter than the one we were building. Dr. Moran's role was that of an informal consultant; neither he nor anyone else at LLNL designed the University's light pipe or participated in the design review process, fabrication or installation of the light pipe.

12. As noted above, the light pipe went through design and review process as set forth in LLE Instruction 7700A. Specifically, a project requirements review occurred on June 7, 2005 and a Fiscal Year 2006 budget request for the light pipe was submitted in September 2005. On October 14, 2005, the light pipe underwent a conceptual design review. The preliminary design review took place November 29, 2005. The final design review occurred June 13, 2006. Copies of my presentations, together with the design and review meeting minutes are attached as follows:

Exhibit 8: Minutes from Project Requirements Review meeting

Exhibit 9: Fiscal Year 2006 Budget Request for New Project

Exhibit 10: My presentation to, and minutes from Conceptual Design Review meeting

Exhibit 11: My presentation to, and minutes from Preliminary Design Review meeting

Exhibit 12: My presentation to, and minutes from Final Design Review meeting

13. No one from defendants Los Alamos National Security LLC ("Los Alamos"), Massachusetts Institute of Technology, or AWE, PLC, was present at these meetings. Nor did any of the defendants play any role in or have any influence over any stage of the design and approval process, or on the manufacturing or installation of the light pipe. In fact, to my knowledge, prior to plaintiff's accident, none of the principal investigators listed on the shot request forms for the experiment that occurred August 6, 2008, other than me, had ever seen the light pipe, except perhaps the small portion that was located in La Cave.

14. The mechanical aspects of the light pipe were designed by the LLE Mechanical Group, in particular, Chris Fullone, a University-employed laboratory engineer, Andy Dillenbeck, a University-employed senior laboratory engineer and Pat Ellsworth, a University co-op student.

15. On June 28, 2006 and July 5, 2006, I observed as William (Jack) Armstrong (who is a deputy of the Experimental Operations Group Leader, a University employee) with the help of Miguel Cruz installed the light pipe in the target bay with the assistance of other University employees. They secured the light pipe to a support bracket that, in turn, was attached with several bolts to the underside of a raised personnel platform (similar to a catwalk) that encircles the target chamber. Once installed, a small, lower portion of the light pipe extended through the

floor of the target bay into La Cave. The streak camera and PMT were attached to the portion of the light pipe located in La Cave.

16. The light pipe successfully operated in the Omega Facility from July 2006 to August 6, 2008 both in scintillator and CO_2 Cherenkov modes and provided valuable scientific data.

17. On August 6, 2008, the Omega Facility executed a series of shots that previously had been proposed by Dr. Hans Herrmann, an employee of Los Alamos, as part of an ongoing experiment called the DT Ratio campaign. Dr. Herrmann was the lead principal investigator for the DT Ratio campaign.

18. I was designated on the shot request forms for the August 6 shots as a secondary principal investigator for this experiment because Dr. Herrmann sought to use several neutron diagnostics for which I was responsible, including the light pipe, and because I planned to use the August 6 shots to test and calibrate some of the neutron diagnostics. I reviewed the neutron diagnostic pages of the shot request forms and modified them as necessary to reflect the proper selection and set up of the neutron diagnostics that Dr. Herrmann had asked to use during the proposed shots.

19. One of the diagnostics Dr. Herrmann asked to use during the August 6, 2008 experiment was the light pipe. Specifically, Dr. Herrmann requested use of the light pipe in CO_2 Cherenkov mode. A true and correct copy of Dr. Herrmann's e-mail asking to use the light pipe is attached at Exhibit 13.

20. I accepted Dr. Herrmann's proposal that the light pipe be used in CO_2 Cherenkov mode, and was present in the control room on August 6, 2008 when the light pipe was in use. To

record additional scientific data during the course of the experiment, it was necessary to reduce the CO_2 pressure in the light pipe from 100 psi to 50 psi.

21. I asked plaintiff whether he knew how to make the necessary pressure change to the CO_2 cell in the light pipe and plaintiff confirmed that he had the knowledge and experience to do so. I then asked plaintiff to decrease the CO_2 pressure in the cell from 100 psi to 50 psi. After obtaining the approval of the Shot Director on duty, plaintiff entered the target bay to make the change; his accident took place while he was in the target bay.

22. None of the defendants' employees participated in the decision to adjust the CO_2 pressure in the light pipe during the August 6, 2008 experiment, nor did any of the defendants' employees make any requests to plaintiff concerning the operation of the light pipe.

s/ Vladimir Glebov
Dr. Vladimir Glebov

Sworn to before me this
30th day of August, 2012

/s Sarah J. Frasier
Notary Public